

# Manual Motor Starters and Motor Starter Combinations

Manual motor starters from ABB properly switch motors ON and OFF and protect them in case of overload and short circuit.

Thus, ABB's manual motor starter know-how increases the reliability and availability of applications thanks to the extremely quick short circuit cut-off in cases that could cause motor damage.

ABB motor starter combinations constitute a reliable, cost-efficient solution for all your motor protection needs, for examples in:

- General engineering and plants
- Industries
- Conveyor systems
- Chemical industries including process engineering
- Pharmaceutical industries
- Automation of buildings, e. g. in air-conditionings
- Environmental plants
- Power stations
- Fresh water and sewage plants
- Machine tools

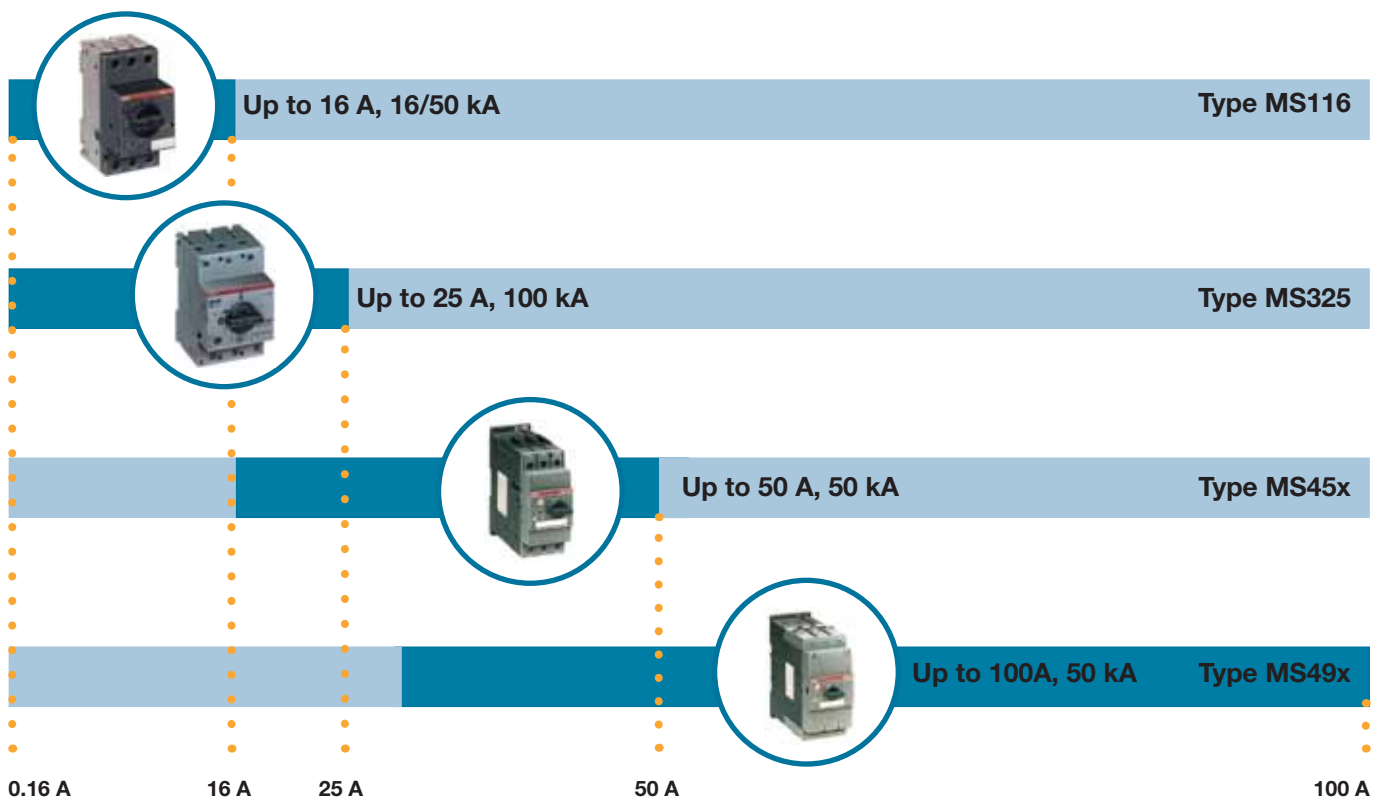
**Manual motor starters provide protection against:**

- Overload
- Short circuit
- Phase failure
- Undervoltage

Fuseless protection saves costs and space and provides for quick reaction under short circuit condition, switching the motor off within 3 ms. It is therefore an easy to handle, cost effective protection solution.



## Switching capabilities of ABB's manual motor starters



# Manual Motor Starters from ABB

ABB offers a wide range of a manual motor starters providing highly efficient motor protection up to 100 A. The arc breaking capacity of the devices can reach up to 100 kA depending of the motor starter type used, without the necessity for any special upstream protection.

Thanks to its design MS116/325 are suitable for industrial applications as well as for domestic installations.

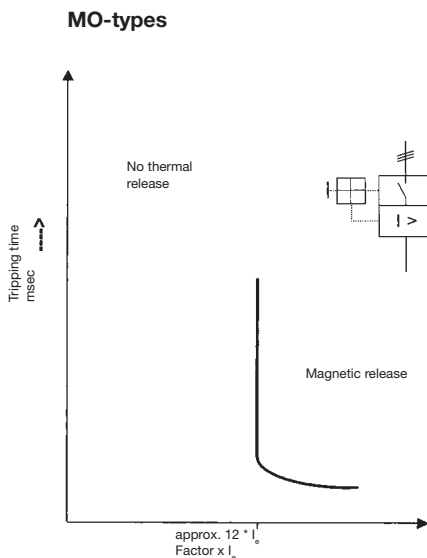
The device-types MS116/325 can be easily coordinated with the ABB MCB-system, which is used in installations for touch-proved enclosures and panels. MS450 to MS497 are your best choice for high power applications. These models are used to power up large motors up to 45 kW.

## Technical Data, Overview

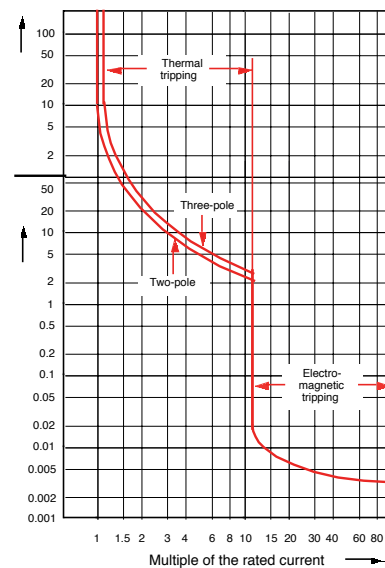
Motorstarter type	MS116	MS325	MS45x	MS49x
$I_n$ /A	16	25	50	100
$I_{CS}$ /kA	16/30/50	50/100	25/50	25/50/100
Tripping class	10	10	10,20	10,20
Magnetic type only		●	●	●
Disconnect Capability, ref. IEC 60947-1	●	●	●	●
UL 508 type E		●	●	●

The types MS325 have the lowest “energy let through”-values on the market in case of short circuits. This way cables and the wiring are also protected optimally, providing for even higher safety.

Manual motor starters must be set to the rated motor demand. Higher current is needed at motor start-up. During the start-up period the manual motor starter will let the current go through and will not trip, following the pertaining international standards and curves for motor start and hold operation.



**MSx Tripping curves**



# Manual Motor Starters MS4xx

## Ordering details



MS45x

SST02198



MS49x

SST01988



MS495 with A95  
connected via BEA 110/495

ST14-02



MS495 with auxiliary switch  
HKS4-02 and open-circuit shunt  
release AA4 in addition to termi-  
nal shroud KA495C

SST 09498

Type	Setting range	Order code	Weight / piece kg	Packing unit piece	Price
	A . . . A				

### MS450 with thermal and electromagnetic trips, tripping class 10, short-circuit-proof up to 50 kA ①

MS450 – 16	11 ... 16	1SAM 450 000 R1001	0.96	1	
MS450 – 20	14 ... 20	1SAM 450 000 R1002	0.96	1	
MS450 – 25	18 ... 25	1SAM 450 000 R1003	0.96	1	
MS450 – 32	22 ... 32	1SAM 450 000 R1004	0.96	1	
MS450 – 40	28 ... 40	1SAM 450 000 R1005	0.96	1	
MS450 – 45	36 ... 45	1SAM 450 000 R1006	0.96	1	
MS450 – 50	40 ... 50	1SAM 450 000 R1007	0.96	1	

### MS495 with thermal and electromagnetic trips, tripping class 10, short-circuit-proof up to 50 kA ①

MS495 – 40	28 ... 40	1SAM 550 000 R1005	2.1	1	
MS495 – 50	36 ... 50	1SAM 550 000 R1006	2.1	1	
MS495 – 63	45 ... 63	1SAM 550 000 R1007	2.1	1	
MS495 – 75	57 ... 75	1SAM 550 000 R1008	2.1	1	
MS495 – 90	70 ... 90	1SAM 550 000 R1009	2.1	1	
MS495 – 100	80 ...100 ②	1SAM 550 000 R1010	2.1	1	

### MS497 with thermal and electromagnetic trips, tripping class 10, short-circuit-proof up to 100 kA ①

MS497 – 16	11 ... 16	1SAM 580 000 R1001	2.1	1	
MS497 – 20	14 ... 20	1SAM 580 000 R1002	2.1	1	
MS497 – 25	18 ... 25	1SAM 580 000 R1003	2.1	1	
MS497 – 32	22 ... 32	1SAM 580 000 R1004	2.1	1	
MS497 – 40	28 ... 40	1SAM 580 000 R1005	2.1	1	
MS497 – 50	36 ... 50	1SAM 580 000 R1006	2.1	1	
MS497 – 63	45 ... 63	1SAM 580 000 R1007	2.1	1	
MS497 – 75	57 ... 75	1SAM 580 000 R1008	2.1	1	
MS497 – 90	70 ... 90	1SAM 580 000 R1009	2.1	1	
MS497 – 100	80 ...100 ②	1SAM 580 000 R1010	2.1	1	

### MS451 with thermal and electromagnetic trips, tripping class 20, for heavy start short-circuit-proof up to 50 kA ①

MS451 – 16	11 ... 16	1SAM 470 000 R1001	0.96	1	
MS451 – 20	14 ... 20	1SAM 470 000 R1002	0.96	1	
MS451 – 25	18 ... 25	1SAM 470 000 R1003	0.96	1	
MS451 – 32	22 ... 32	1SAM 470 000 R1004	0.96	1	
MS451 – 40	28 ... 40	1SAM 470 000 R1005	0.96	1	
MS451 – 45	36 ... 45	1SAM 470 000 R1006	0.96	1	
MS451 – 50	40 ... 50	1SAM 470 000 R1007	0.96	1	

### MS496 with thermal and electromagnetic trips, tripping class 20, for heavy start short-circuit-proof up to 100 kA ①

MS496 – 40	28 ... 40	1SAM 570 000 R1005	2.1	1	
MS496 – 50	36 ... 50	1SAM 570 000 R1006	2.1	1	
MS496 – 63	45 ... 63	1SAM 570 000 R1007	2.1	1	
MS496 – 75	57 ... 75	1SAM 570 000 R1008	2.1	1	
MS496 – 90	70 ... 90	1SAM 570 000 R1009	2.1	1	
MS496 – 100	80 ...100 ②	1SAM 570 000 R1010	2.1	1	

### Direct adapter for wiring MS450 - MS497 to contactors

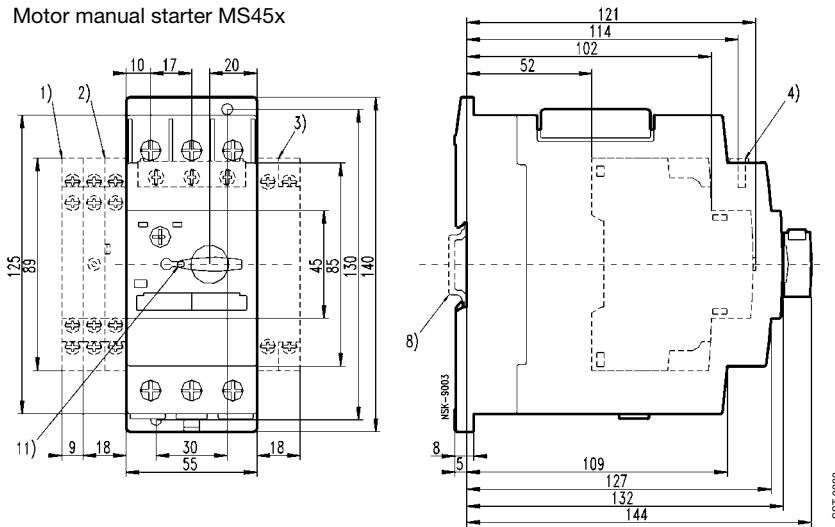
Type	Order code	Weight / piece kg	Packing unit piece	Price
BEA40/450, direct adapter MS450 to A30/A40	1SBN 083 206 R1000	0.061	1	
BEA50/450, direct adapter MS450 to A50 plate	1SBN 083 506 R1000	0.062	1	
BEA75/495, direct adapter MS495-497 to A50/63/75	1SBN 084 106 R1000	0.120	1	
BEA110/495, direct adapter MS495-497 to A95/A110	1SBN 084 506 R1000	0.124	1	

① See table on Page 24, ② Max. motor current 95 A

# Manual Motor Starters MS45x / MS49x

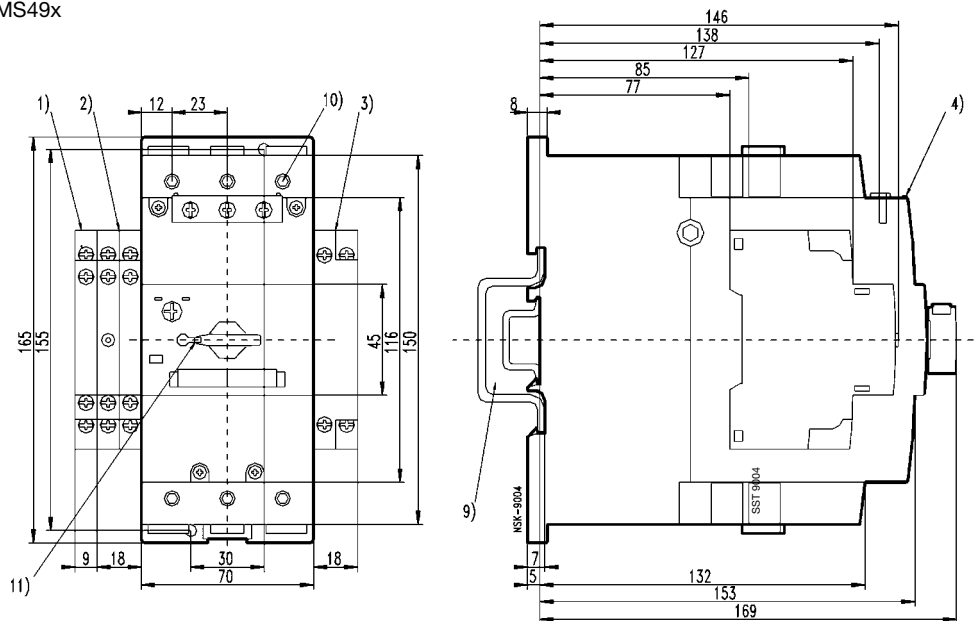
## Dimension diagrams

Motor manual starter MS45x



- Auxiliary switch block HKS4
- ▶ Pilot switch SK4
- Open-circuit shunt release/undervoltage release AA4, UA4, UA4-HK
- Auxiliary switch HK4
- Top-hat rail 35 mm to DIN EN 50022
- ◻ Top-hat rail 35 mm, 15 mm high to DIN EN 50022
- or Top-hat rail 75 mm to DIN EN 50023
- Switch knob lockable in zero position with bracket diameter 5 mm

Motor manual starter MS49x



MS45x with disconnecter module TB450

